

**Project WET
Connections to KY
Core Content 4.1**

Macroinvertebrate Mayhem p.322

Elementary

Mathematics

MA-EP-4.1.1

Students will analyze and make inferences from data displays (drawings, tables/charts, tally tables, pictographs, bar graphs, circle graphs with two or three sectors, line plots, two-circle Venn diagrams).

DOK 3

MA-04-4.1.1

Students will analyze and make inferences from data displays (drawings, tables/charts, tally tables, pictographs, bar graphs, circle graphs, line plots, Venn diagrams).

DOK 3

MA-05-4.1.1

Students will analyze and make inferences from data displays (drawings, tables/charts, tally tables, pictographs, bar graphs, circle graphs, line plots, Venn diagrams, line graphs).

DOK 3

MA-EP-4.1.2

Students will collect data.

MA-04-4.1.2

Students will collect data.

MA-05-4.1.2

Students will collect data (e.g., tallies, surveys) and explain how the skills apply in real-world and mathematical problems.

MA-EP-4.1.3

Students will organize and display data.

MA-04-4.1.3

Students will construct data displays (pictographs, bar graphs, line plots, Venn diagrams, tables).

DOK 2

MA-05-4.1.3

Students will construct data displays (pictographs, bar graphs, line plots, line graphs, Venn diagrams, tables).

DOK 2

Practical Living

PL-EP-2.1.1

Students will apply fundamental motor skills:

Locomotor:

Walking

Running

Skipping

Hopping

Gallop

Sliding

Leaping

Jumping

Nonlocomotor:

Turning

Twisting

Bending

Stretching

Swinging

Swaying

Balancing

Fundamental manipulative skills:

Hitting

Kicking

Throwing

Catching

Striking

Dribbling

PL-04-2.1.1

Students will apply fundamental motor skills:

Locomotor:

Walking

Running

Skipping

Hopping

Gallop

Sliding

Leaping

Jumping

Nonlocomotor:

Turning
Twisting
Bending
Stretching
Swinging
Swaying
Balancing

Fundamental manipulative skills:

Hitting
Kicking
Throwing
Catching
Striking
Dribbling

PL-05-2.1.1

Students will apply fundamental motor skills:

Locomotor:

Walking
Running
Skipping
Hopping
Gallop
Sliding
Leaping
Jumping

Nonlocomotor:

Turning
Twisting
Bending
Stretching
Swinging
Swaying
Balancing

Fundamental manipulative skills:

Hitting
Kicking
Throwing
Catching
Striking
Dribbling

Science

SC-05-3.5.1

Students will describe cause and effect relationships between enhanced survival/reproductive success and particular biological adaptations (e.g., changes in structures, behaviors, and/or physiology) to generalize about the diversity of populations of organisms.

Biological change over time accounts for the diversity of populations developed through gradual processes over many generations. Examining cause and effect relationships between enhanced survival/reproductive success and biological adaptations (e.g., changes in structures, behaviors, and/or physiology), based on evidence gathered, creates the basis for explaining diversity.

DOK 2

SC-EP-4.7.1

Students will describe the cause and effect relationships existing between organisms and their environments.

The world has many different environments. Organisms require an environment in which their needs can be met. When the environment changes some plants and animals survive and reproduce and others die or move to new locations.

DOK 2

SC-04-4.7.1

Students will make predictions and/or inferences based on patterns of evidence related to the survival and reproductive success of organisms in particular environments.

The world has many different environments. Distinct environments support the lives of different types of organisms. When the environment changes some plants and animals survive and reproduce and others die or move to new locations. Examples of environmental changes resulting in either increase or decrease in numbers of a particular organism should be explored in order to discover patterns and resulting cause and effect relationships between organisms and their environments (e.g., structures and behaviors that make an organism suited to a particular environment). Connections and conclusions should be made based on the data.

DOK 3

SC-05-4.7.1

Students will:

- describe and categorize populations of organisms according to the function they serve in an ecosystem (e.g., producers, consumers, decomposers);
- draw conclusions about the effects of changes to populations in an ecosystem.

Populations of organisms can be categorized by the function they serve in an ecosystem. Plants and some microorganisms are producers because they make their own food. All animals, including humans, are consumers, and obtain their food by eating other organisms. Decomposers, primarily bacteria and fungi, are consumers that use waste materials and dead organisms for food. Food webs identify the relationships among producers, consumers and decomposers in an ecosystem. Using data gained from observing interacting components within an ecosystem, the effects of changes can be predicted.

DOK 3

Middle School

Mathematics

MA-06-4.1.1

Students will analyze and make inferences from data displays (drawings, tables/charts, pictographs, bar graphs, circle graphs, line plots, Venn diagrams, line graphs, stem-and-leaf plots).

DOK 3

MA-07-4.1.1

Students will analyze and make inferences from data displays (drawings, tables/charts, pictographs, bar graphs, circle graphs, line plots, Venn diagrams, line graphs, stem-and-leaf plots, scatter plots).

DOK 3

MA-08-4.1.1

Students will analyze and make inferences from data displays (drawings, tables/charts, pictographs, bar graphs, circle graphs, line plots, Venn diagrams, line graphs, stem-and-leaf plots, scatter plots, histograms, box-and-whiskers plots).

DOK 3

MA-06-4.1.2

Students will explain how different representations of data (e.g., tables, graphs, diagrams, plots) are related.

MA-07-4.1.2

Students will explain how different representations of data (e.g., tables, graphs, diagrams, plots) are related.

MA-08-4.1.2

Students will explain how different representations of data (e.g., tables, graphs, diagrams, plots) are related.

MA-07-4.1.3

Students will read/interpret, analyze and make inferences from box and whisker plots of data and make predictions and draw conclusions from the data.

Practical Living

PL-06-2.1.1

Students will apply a combination techniques of locomotor and nonlocomotor skills which are necessary for the improvement of transitional motor skills (e.g., punting, serving, dribbling):

locomotor - moving from one place to another (e.g., running, skipping, hopping)

nonlocomotor – stationary (e.g., bending, stretching, twisting) movements

PL-07-2.1.1

Students will apply a combination techniques of locomotor and nonlocomotor skills which are necessary for the improvement of transitional motor skills (e.g., punting, serving, dribbling):

locomotor - moving from one place to another (e.g., running, skipping, hopping)

nonlocomotor - stationary (e.g., bending, stretching, twisting) movements

PL-08-2.1.1

Students will apply a combination techniques of locomotor and nonlocomotor skills which are necessary for the improvement of transitional motor skills (e.g., punting, serving, dribbling):

locomotor - moving from one place to another (e.g., running, skipping, hopping)

nonlocomotor – stationary (e.g., bending, stretching, twisting) movements

Science

SC-06-3.5.1

Students will explain that biological change over time accounts for the diversity of species developed through gradual processes over many generations.

Biological adaptations include changes in structures, behaviors, or physiology that enhance survival and reproductive success in a particular environment.

DOK 2

SC-06-4.7.1

Students will describe the consequences of change in one or more abiotic factors on a population within an ecosystem.

The number of organisms an ecosystem can support depends on the resources available and abiotic factors (e.g., quantity of light and water, range of temperatures, soil composition).

DOK 2

SC-07-4.7.1

Students will compare abiotic and biotic factors in an ecosystem in order to explain consequences of change in one or more factors.

The number of organisms an ecosystem can support depends on the resources available and abiotic factors (e.g., quantity of light and water, range of temperatures, soil composition). Given adequate biotic and abiotic resources and no diseases or predators, populations (including humans) increase at rapid rates. Lack of resources and other factors, such as predation and climate, limit the growth of populations in specific niches in the ecosystem.

DOK 3

SC-08-4.7.1

Students will describe the interrelationships and interdependencies within an ecosystem and predict the effects of change on one or more components within an ecosystem.

Organisms both cooperate and compete in ecosystems. Often changes in one component of an ecosystem will have effects on the entire system that are difficult to predict. The interrelationships and interdependencies of these organisms may generate ecosystems that are stable for hundreds or thousands of years.

DOK 3

High School

Science

SC-HS-3.5.1

Students will:

- predict the impact on species of changes to 1) the potential for a species to increase its numbers, (2) the genetic variability of offspring due to mutation and recombination of genes, (3) a finite supply of the resources required for life, or (4) natural selection;
- propose solutions to real-world problems of endangered and extinct species.

Species change over time. Biological change over time is the consequence of the interactions of (1) the potential for a species to increase its numbers, (2) the genetic variability of offspring due to mutation and recombination of genes, (3) a finite supply of the resources required for life and (4) natural selection. The consequences of change over time provide a scientific explanation for the fossil record of ancient life forms and for the striking molecular similarities observed among the diverse species of living organisms. Changes in DNA (mutations) occur spontaneously at low rates. Some of these changes make no difference to the organism, whereas others can change cells and organisms. Only mutations in germ cells have the potential to create the variation that changes an organism's future offspring.

DOK 3

SC-HS-4.7.1

Students will:

- analyze relationships and interactions among organisms in ecosystems;
- predict the effects on other organisms of changes to one or more components of the ecosystem.

Organisms both cooperate and compete in ecosystems. Often changes in one component of an ecosystem will have effects on the entire system that are difficult to predict. The interrelationships and interdependencies of these organisms may generate ecosystems that are stable for hundreds or thousands of years.

DOK 3